2*15W @4Ω TA2024C Class-D Audio Amplifier User's Guide

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2*15W @4Ω TA2124 Class-D Audio Amplifier

To keep the product in a best working condition and having a long service time, please operate it according to the relevant steps. The warranty lapses if the product is damaged because of incorrect use and your negligence.

Warning: Never immerse the product in the rain or any other humid environment to prevent the fire or electric shock.

Safety Precautions:

1. Carefully handle the power cord

Do not damage or deform the power cord, or it will cause the electric shock or abnormal working.

Removing the power cord from the socket, please confirm what you've hold is the socket not the power cord.

2. Never open the cover

Do not open the cover in order to prevent the electric shock. Any problem, please contact us.

3. Never put other things in the product

Do not put the metal in the product to prevent the liquid, or it will cause electric shock or abnormal working.

Operation Precautions:

1. Care the power cord

When you pull out the plug from the socket, do not pull the power cord but hold the plug.

2. Prevention of the high temperature

Never put the product in the place exposed by the sun or near to the heating equipment.

3. Caution of the rack or chassis installation

Never put this product in a closed rack.

4. Never open the cover

It's dangerous to open the bottom chassis or put your hand in the chassis, so do not open it. If this product has something wrong, pull out the power plug immediately and contact us.

5. Protect the chassis

Avoid spraying insecticides near the product. Do not wipe the product with liquid like gasoline, water or other solvents, which easily cause the change of the quality or the color. Use soft cloth to clean dust. Please follow the instructions in this user's manual when you use the chemical-treated cloth.

6. Prevent sundries from falling into this product

Be especially careful to prevent the sundries like needles, hairpins, coins from falling into this product.

7. When you go out

If you don't use this product in a long time, e.g. when you go out for a trip, you must pull out the plug from the power socket.

8. Be care with humidity, water and dust

Do not put this product in the highly humid position or the position with much dust. Do not place vases or something with water in on this product.

9. Please keep the manual well

After reading this instruction, please keep it well along with the warranty card，which will be helpful when there are faults.

Attention please. In order to explain clearly to users, the graphic representation in this user's manual may be some different from the real device.

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NOTES:

Product Version : **Ver 1.1**

Document Version : **Ver 1.0**

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Chapter 1. Overview

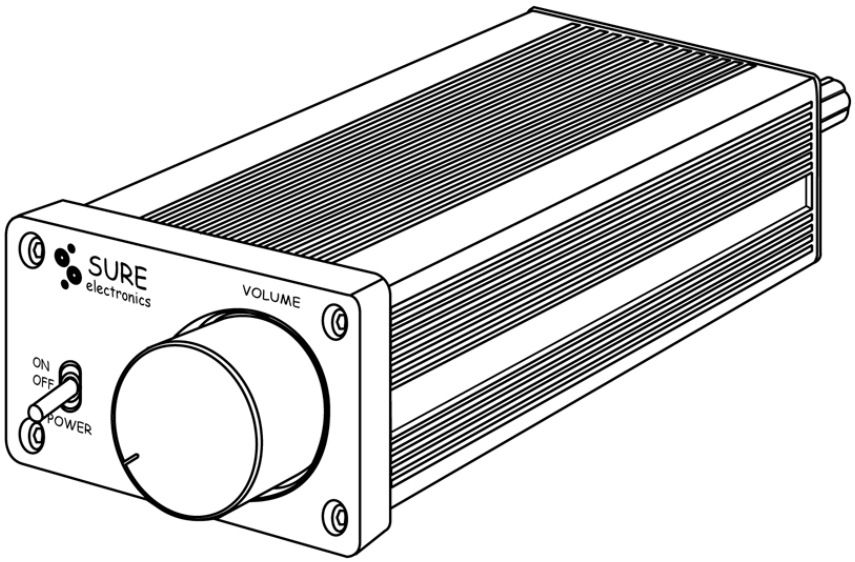
1.1 Overview

Welcome to use this self-made 2*15W audio amplifier board. This product is of small size, portable and elegant. Outer casing is fully made from aluminum alloy, so it is tough and durable. What more important is that it is an ideal Class-D audio power amplifier, integrated with TA2024C which is currently popular around the world. It not only provides dream sound but also has high efficiency, thus it can dissipate the heat after long-time working to ensure that the amplifier can works in a stable condition for long time.

This product supports dual channel amplification of up to 15W each and Hi-Fi output. In order to ensure reproduction of perfect sound, we adopt volume potentiometers of high quality. Thus volume can be precisely adjusted and sound of high quality can be gained, although the product has worked for long time. With built-in MCU, this product can provide over/under voltage protection, low current protection and display LED state.

This product can be powered by any DC power supply ranging from 9 to 14V. You can use it to drive any 4Ω or 8Ω passive speakers.

FIGURE 1-1 OVERVIEW



1.2 Accessory

Please check carefully the packing box, which contains the things as follows:

1. One main power amplifier
2. One user's manual

1.3 Features

1 Ideal Class-D power amplifier
2 Range of power supply: DC9V—14V;
3 Fully made from aluminum alloy, compact, pleasing, fashionable and durable
4 Original TA2024 chip ensures the perfect sound.

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5 Volume potentiometer of high-quality can adjust the volume precisely after long-time use

6 “Audiophile” Quality Sound:

0.1% THD+N @ 9W, 4Ω;

0.1% THD+N @ 6W, 8Ω;

7 High Power

15W @ 4Ω, 10% THD+N

10W @ 8Ω, 10% THD+N

8 High Efficiency

81% @ 15W, 4Ω

90% @ 10W, 8Ω

9 Suitable for the input of many kinds of audio signals

10 MCU based, more fashionable and attractive, creating dynamic LED breathing effect

11 Over / under voltage turn off

12 Over current protection

13 Over temperature protection

1.4 Applications

1 Home Theater

2 Powered Subwoofers

3 Powered DVD Systems

4 Mini/Micro Systems

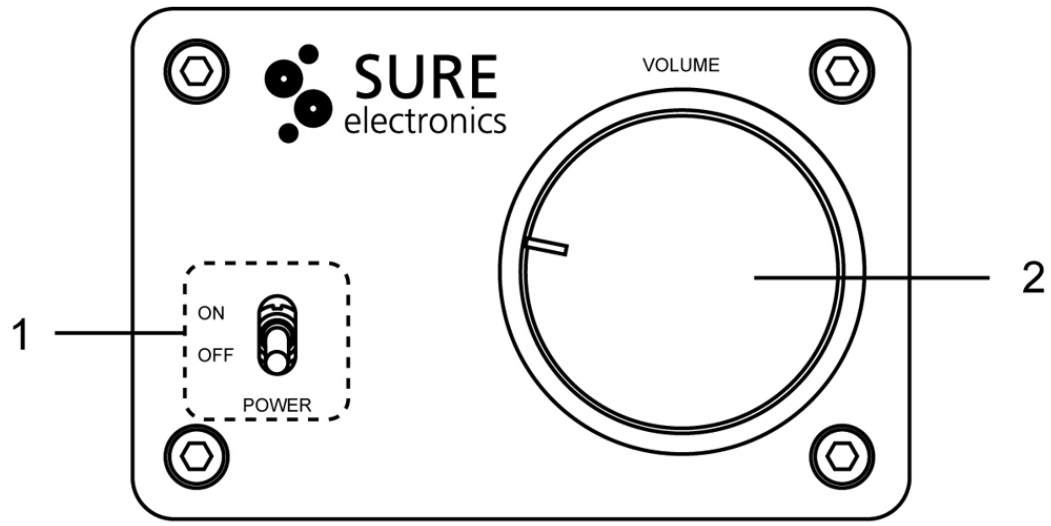
5 MP3, Video CD output Amplification

1.5 Components and Function

1.5.1 Front panel

Please refer to the corresponding pages for the detailed information.

FIGURE 1-3 (POWER SWITCH, VOLUME KNOB)



1—power switch 2—volume knob

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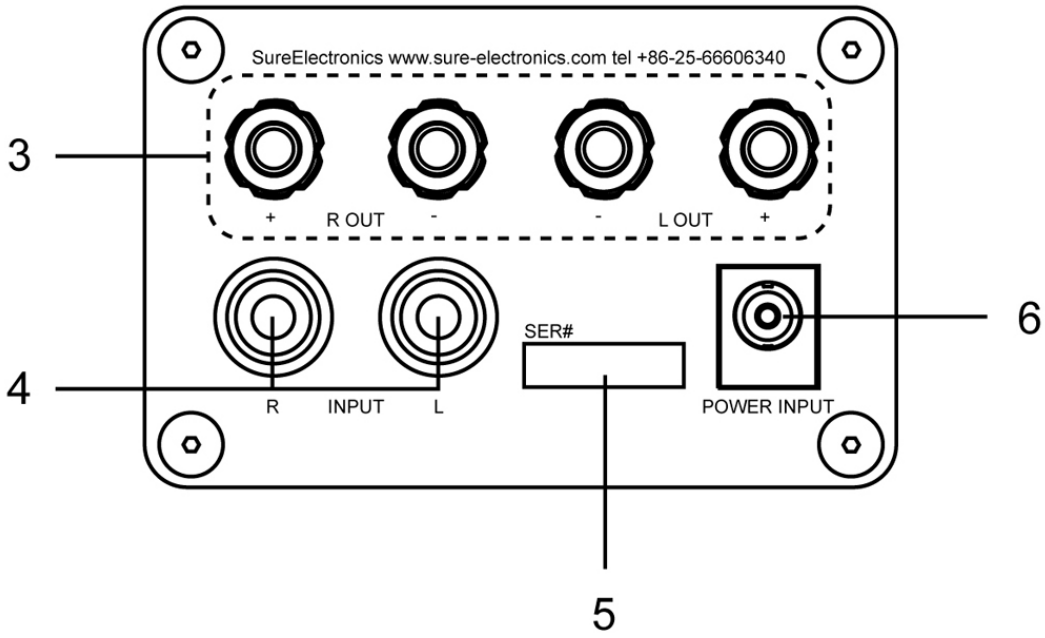
1.5.2 Back panel

FIGURE 1-4 (POWER INPUT, SPEAKER OUTPUT, AUDIO SIGNAL INPUT)

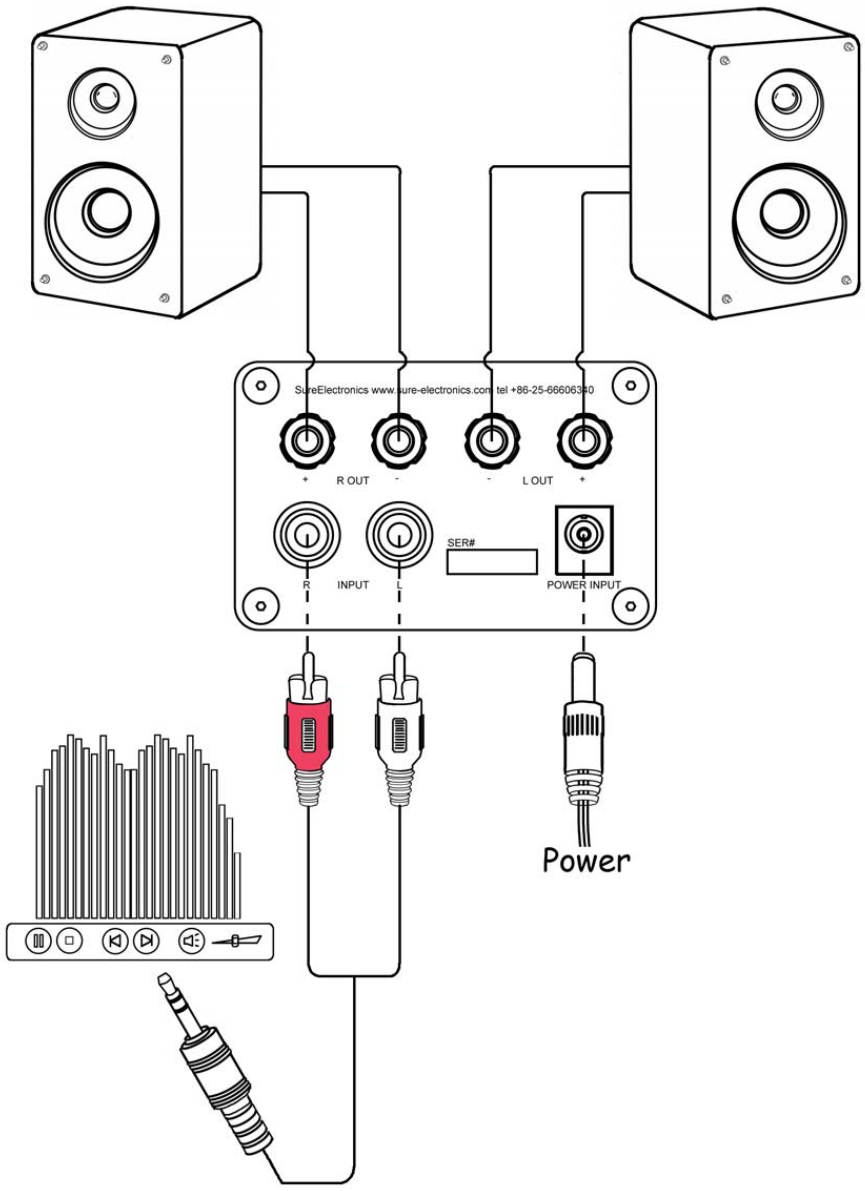


3—speaker output terminal　　4—audio signal input terminal

5—serial number　　6—power input

1.5.3 Connection

FIGURE 1-5 CONNECTING SCHEMATICS



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Chapter 2. Hardware Detail

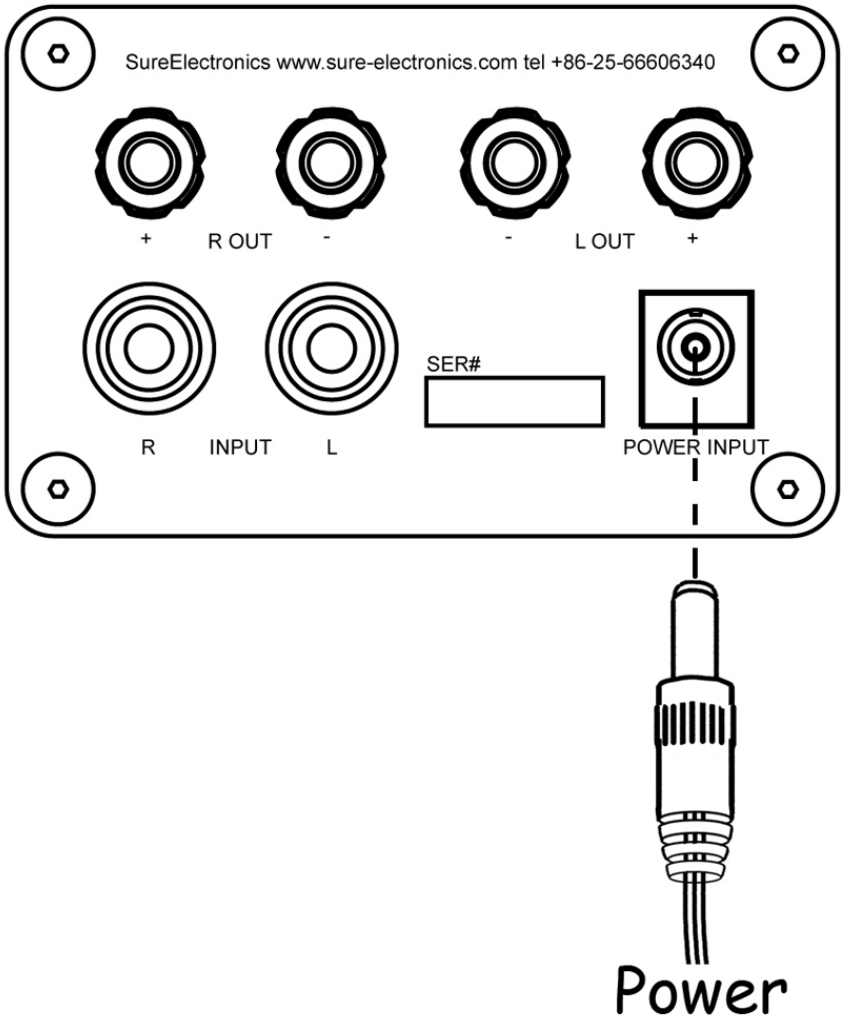
2.1 Power Connection

A voltage-regulated power of high-performance is necessary to provide basic and enough power so that this product could work stably, or any problem caused by poor power is out of the warranty.

This product works at DC12V. Please refer to **Chapter 3 for basic parameters**

Please connect the power voltage regulator with the audio power amplifier according to the following schematics:

FIGURE 2-1 POWER CONNECTION SCHEMATIC



2.2 Switch Setting

When the switch is ON, the machine is working and LED is lighting all the time. When the switch is OFF, the machine is in standby mode and LED shows breathing-effect lighting.

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FIGURE 2-2 SWITCH SETTING

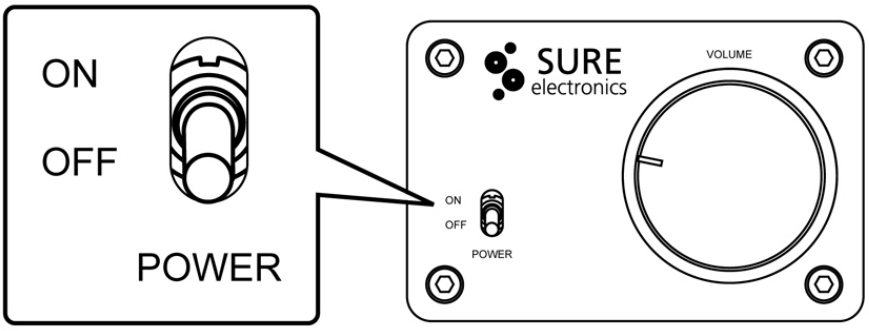


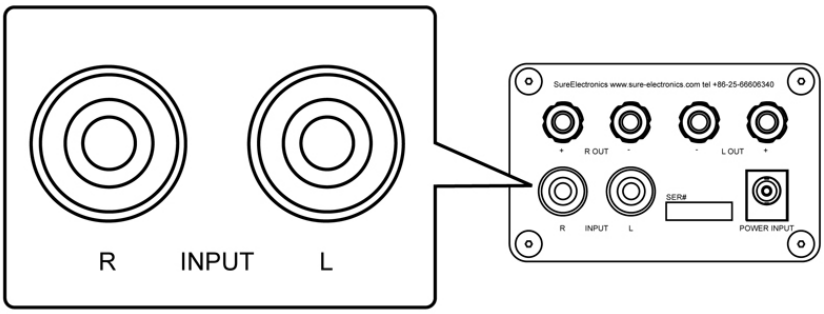
TABLE 2-1 SWITCH FUNCTION

State	Function	LED state
ON	Amplifier working	LED always lighting
OFF	Amplifier not working	LED lighting in a breathing-effect state

2.3 Input Connection

This product adopts RCA socket to input audio signal. You need a 3.5 to RCA cable which we do not provide in the accessory.

FIGURE 2-3 INPUT CONNECTION



2.4 Output Connection

This product adopts Banana socket with two output channels to output audio signal. Pay attention that LOUT+ and LOUT- are Left Output Channels, ROUT+ and ROUT- are Right Output Channels.

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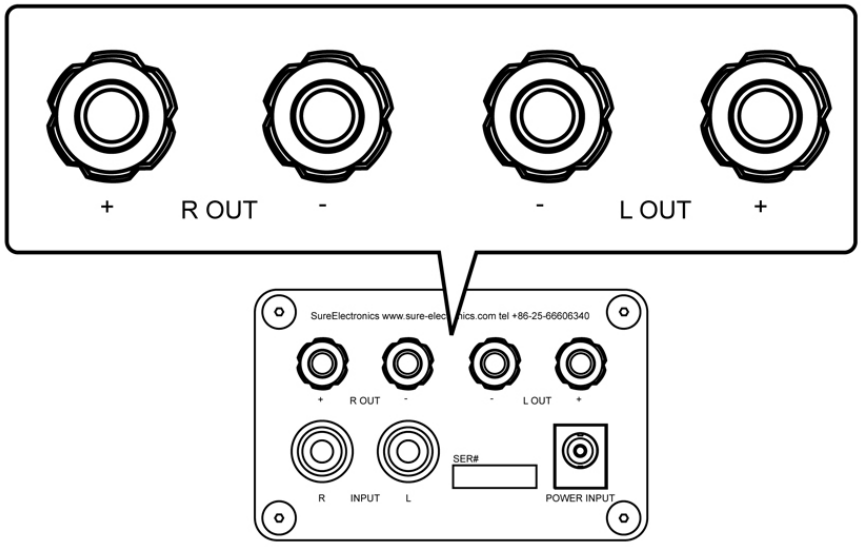
FIGURE 2-4 OUTPUT CONNECTION

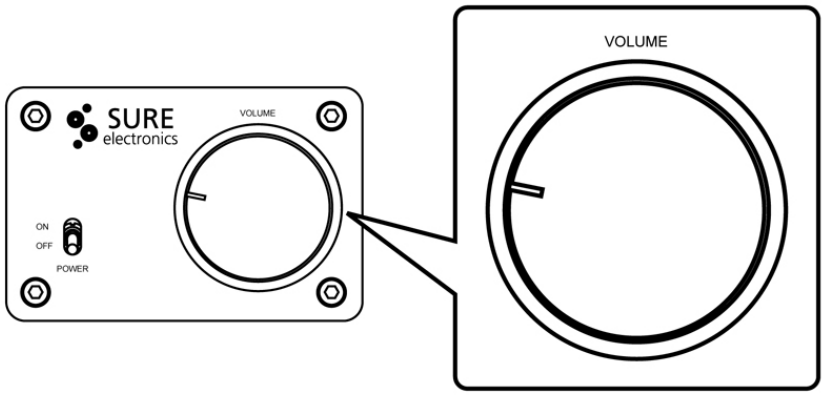


Note: LOUT- and ROUT- are not in the same net and can not be connected together. Moreover, LOUT+, LOUT-, ROUT+, ROUT- can not be connected to the ground

2.5 Volume Control

We adopt volume potentiometer of high-quality which can adjust the volume precisely after long-time use

FIGURE 2-5 VOLUME CONTROL



2.6 LED Indicators

This product is based on MCU which controls the indicators to display dynamic LED state and make this product more fashionable and attractive. Please refer to table 2-1 for details.

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Chapter 3. Electrical Characteristics

3.1 Basic Parameters

Basic parameter tested @DC12V 4ohm (except for the parameter marked with *)

TABLE 3-1 BASIC PARAMETERS

Parameter	Min	Typical	Max
Power voltage	9V	12V	14V
Input Sensitivity	250mV	270mV	290mV
Frequency		20Hz—–20KHz(±3dB)	
Output power* （V_{CC} = 12V, R_L = 4Ω）		9W@4ohm, THD+N<0.1%	
		12W@4ohms, THD+N<1%	
		15W@4ohms, THD+N<10%	
Output power * （V_{CC} = 12V, R_L = 8Ω）		10W @ 8ohms, THD+N<10%	
（THD+N）		0.03% THD+N @ 9W, 4Ω 0.1% THD+N @11W, 4Ω 0.1% THD+N @6W, 8Ω	
Efficiency		84% @ 15W, 4Ω 90% @ 10W, 8Ω	
Signal/Noise Ratio	90dB(A weighted)	90dB(A weighted)	
Minimum Load Impendence	3.2 ohms	4 ohms	
Input Impendence	10K	20K	
Power Gain	25dB	27.6dB	
Working Temperature	0℃	25℃	55℃

Note: *The chip specifications by Tripath.

3.2 Fault Tracing

If the amplifier does not work well, please read the following table:

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TABLE 3-2 CORRECTIVE MAINTENANCE

Situation	Solutions
No sound	1. Check if it is connected with the power and confirm that the voltage regulator works well. If not, connect the power according to the schematics. 2. Check if the signal input cable is connected correctly and if there is signal. If not, connect the lines according to the schematic and input the audio signal. 3. Check if the output cable is damaged and if the speaker works or not. If not, change the output cable and the speaker. 4. Check if the LED keeps on lighting or not. If not, restart it and ensure that the LED displays breathing effect when the switch is OFF. If it still doesn't work, remove the power and contact us.
Suddenly no sound when the product is working	1. Check if the product has worked for long time or if the audio signal is too high. If it is, turn off the power and turn it on again.
LED off	2. Check if it is connected with the power and confirm that the voltage regulator works well or not. If not, correctly connect it to the power according to the schematics. 3. Check if the product works well or not. If there's sound outputted, it's that the LED has been damaged.
LED on	1. Check if the product works well or not. If not, allocate the switch to OFF, remove the power, and then plug the power, finally turn on the switch.

Note: If the problems above still cannot be solved, maybe the product has something wrong. Now please turn off the power, pull out the power cord from the socket and then contact us. Please refer to chapter five for our contact information.

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Chapter 4. Mechanical Drawing

FIGURE 4-1 FRONT AND BACK PANELS

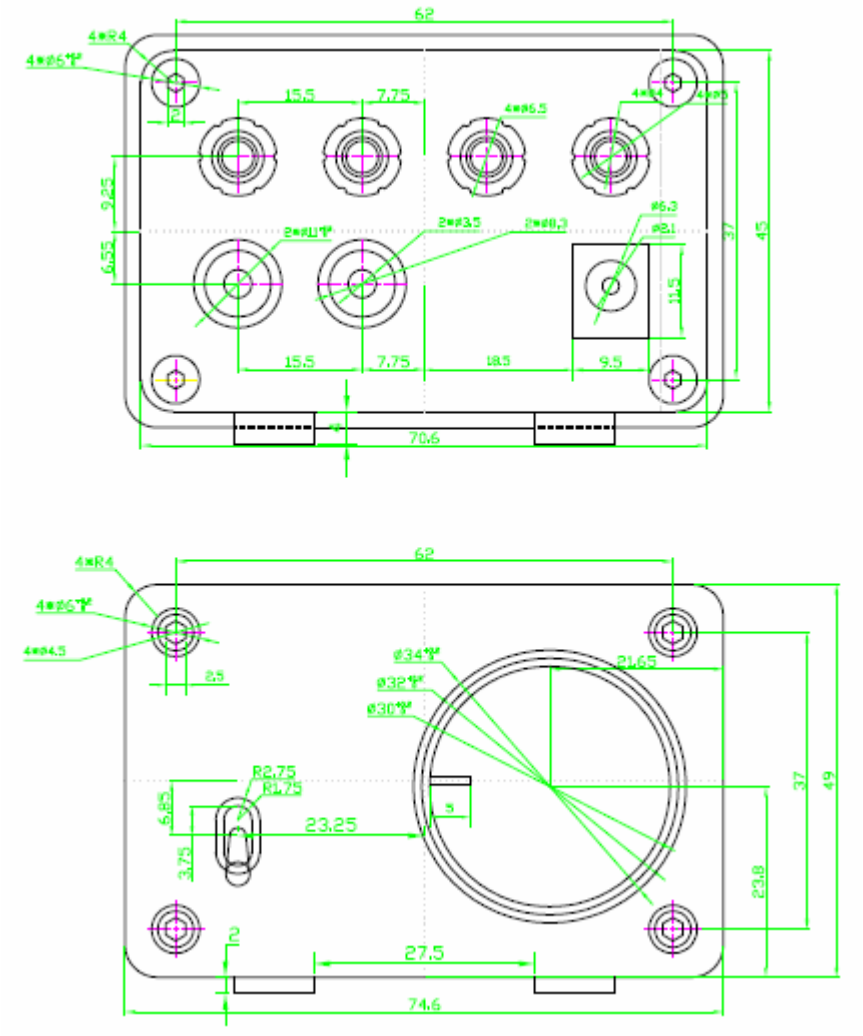
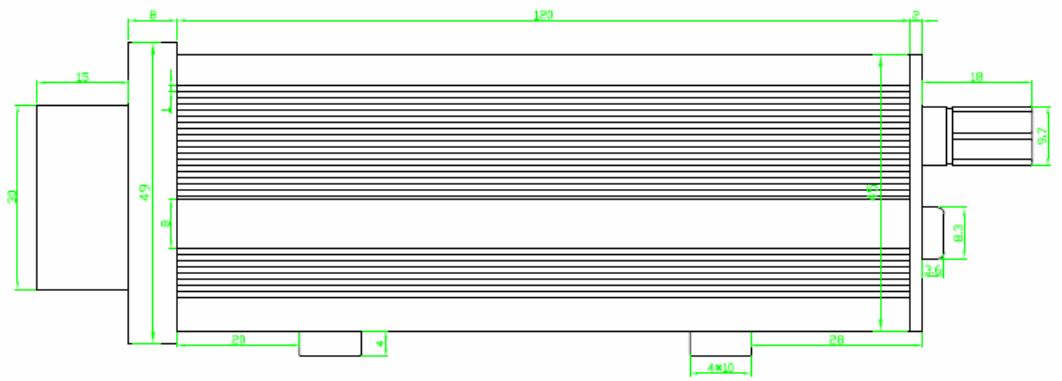


FIGURE 4-2 SIDE VIEW



Note: The unit of all the data in the figures above is millimeter.

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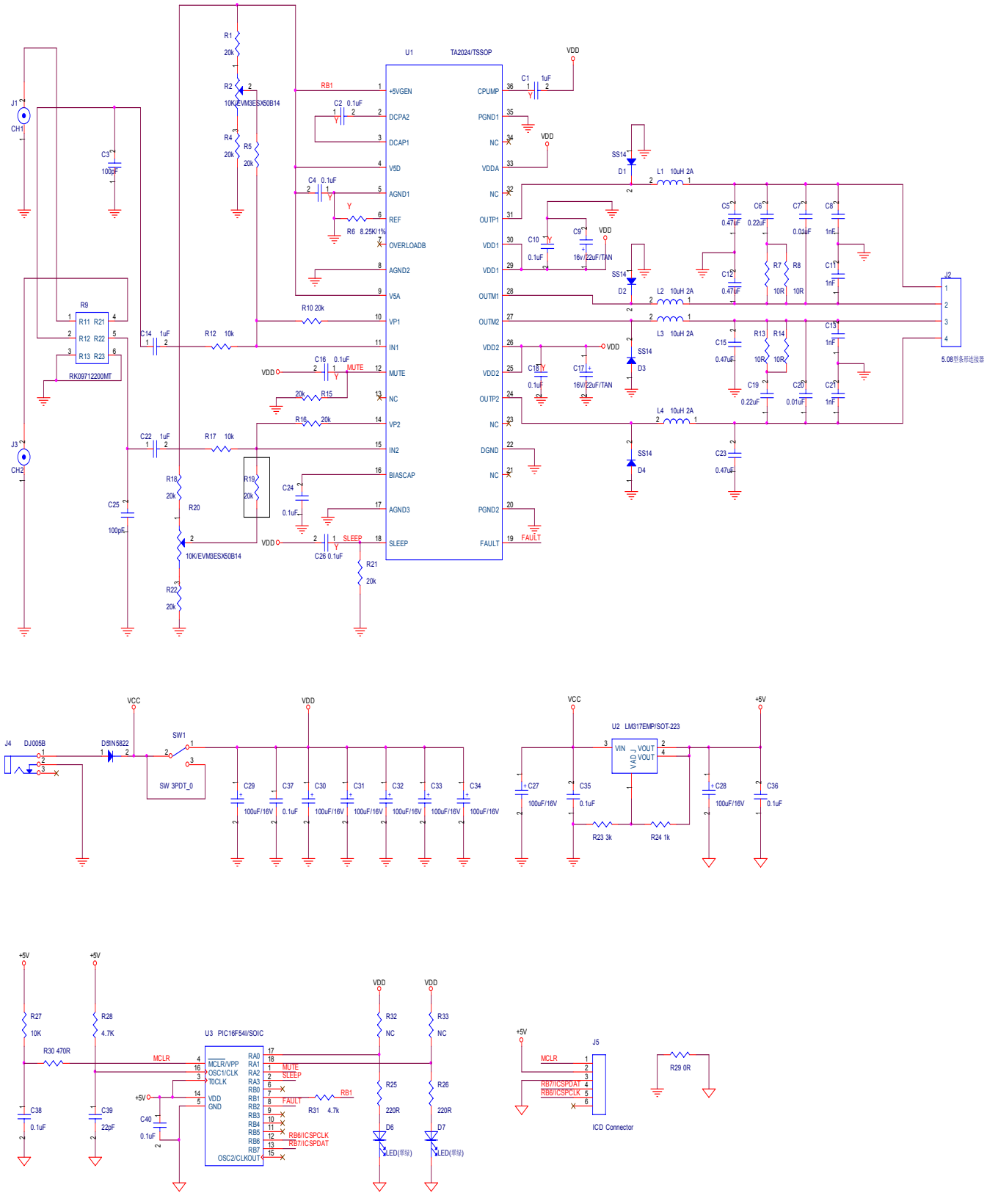
Chapter 5. Appendix

FIGURE 5-1 CIRCUIT SCHEMATIC



Chapter 6. Contact Us

Sure Electronics Co., Ltd.
5F, Zone A,
Qinhuai Technology Innovation Center
105-2 DaMing Rd (ZIP:210022)
Nanjing
P.R.China
Tel: +86-13601408832 (For technical questions only)
+86-25-66606340 (English service, from GMT1-10AM)
Fax: +86-25- 66606341-866
Website: www.sure-electronics.com
www.sure-electronics.net

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